

**REMARKS**

Examiner Cumberledge is thanked for his withdrawal of the finality of the last action and of the prior rejections, and for his thorough analysis in this new non-final action. Reconsideration of the new rejections in light of the current amendments and remarks is respectfully requested.

Claims 1-4, 7, 10-11, 16-20, 31-33, 43, 53, 56, and 58-61 are Not Anticipated by Jackson

The great majority of the new rejections in the pending Office Action rely on U.S. Patent No. 5,980,523 to Jackson. Respectfully, the Jackson reference does not show or suggest all elements of at least the independent claims of this case.

The Office Action alleged that item 110 of Jackson had “ridges” that it considered could constitute a projection as recited in independent claim 1. It is noted that claim 1 recites that the “projection” is placed through an aperture in the body of an interconnection element. Item 110 is disclosed in Jackson as a knurled cylinder (see, e.g., column 7, lines 20-32). Thus, Jackson suggests cutting a number of shallow grooves in a cross-hatch pattern in the cylindrical surface. The surface remains cylindrical, except where material has been gouged out for the grooves. Moreover, the reference uses the term “ridges” for structure at the other end of item 104 (i.e. near number 58 in Fig. 13) to denote structure that prevents relative rotation between items 104 and 54. Clearly those ridges do not enter hole 138 in item 103. With due respect, Jackson discloses grooves cut into a cylindrical rod in item 110, and uses the term “ridge” for something very different from that grooved cylindrical surface.

The Jackson reference also does not show a fastener as recited in claim 1. The Office Action asserted that item 135 of Jackson corresponded to the stud of claim 1. Jackson discloses that item 135 is threaded, and it attaches to item 102 by threading into bore 131 (see, e.g., column 7, line 55-column 8, line 8). There is no fastener needed to engage with the stud, since the stud itself provides secure engagement with item 102. The Office Action alleged that Jackson’s item 20 was such a fastener, but it does not and cannot engage item 135. In Figure 15, item 135 is not seen but is understood to be within item 102. Item 20 is on the other side of item 103 from item 135, and its purpose is to press item 104 against the bottom of hole 138. Since item 104 is between item 20 and any part of item 135, item 20 cannot engage item 135.

Since the Jackson reference does not include a projection nor a fastener as recited in claim 1, it does not anticipate that claim. Further, claims dependent from claim 1 are not

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anticipated by Jackson or obvious over that reference by itself or in the combinations proposed by the Office Action, because neither Jackson nor the proposed combination show all elements of those claims.

There are also dependent claims that are allowable on their own merit. For example, claim 16 recites that the second body on the second shaft includes a lower surface such that engagement of the fastener to the stud urges that lower surface to contact the first shaft. As seen in Figure 13, item 102 of Jackson does not have a lower surface that engages to item 104. Rather, it appears to have side surfaces that contact item 104. It would not have been obvious to change that side contact to bottom contact in the Jackson reference because the ability of the apparatus in Figure 13 to get around bone 145 depends entirely on the ability of items 104 and 102 to pivot with respect to each other around an axis out of the page as seen in that Figure. If item 102 sits atop item 104, the apparatus cannot be positioned around bone 145.

As another example, claim 33 recites that at least one of the first shaft or the second shaft has a smooth exterior surface and a round or oval cross-sectional profile. The Office Action's analysis plainly suggested that cylindrical item 104 is not smooth, and item 102 does not have a round or oval cross-sectional profile, as best seen in Figure 14.

As yet a further example, claim 60 recites that the stud's longitudinal axis and the first shaft's longitudinal axis are oblique. As seen in Figure 14 and implicit in Figure 15, Jackson shows that item 135 is perpendicular, not oblique, to the longitudinal axis of item 110.

Claim 53 is being amended to recite a relationship between the first shaft and the aperture of the interconnection element. The amendment is supported at least by Figures 1 and 2 and paragraph 57 of the application as published. That relationship is not seen in Jackson, in which the cylindrical rod 104 can move into and out of hole 138 regardless of their relative orientations. Screw 20 prevents relative movement, not the relative positioning of the hole and rod. The structure of claim 53 provides a secure connection while leaving out a screw like Jackson's item 20, which Jackson needs to secure its device. Claims dependent from claim 53 are likewise not anticipated by or obvious over Jackson, either due to that dependence or on their own merit.

#### The Relied-On Aspect of Papas is Incompatible with the Jackson Reference

The Office Action asserted that the Papas reference's item 96 is an "insert" as recited in claim 39. However, it is seen in Figures 1 and 3 of Papas that item 96 is only part of a larger

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item 24, and is attached via bar 84 to a plate-type member 80. Papas teaches use of that item 24 to link vertebral screws, with each end being synchronously pivotable with respect to the screws. There is no basis from Papas to use only one end structure of item 24, since both are necessary to the pivoting connection between screws. At best, then, one of ordinary skill could consider importing item 24 into the Jackson device. However, doing so would place bar 84 and plate 80 of Papas' item 24 in the way. As seen in Jackson's Figure 12, bar 84 and plate 80 would either interfere with the thin (or non-existent) space between items 104 and 102, or would remain either above or below the parts of Jackson's device. In that latter case, it would interfere with bone, muscle or other tissues in or adjacent to the spine. Respectfully, no one of ordinary skill would be led to incorporate Papas' item 24 into Jackson's device.

The Fiz and Shluzas References Do Not Render Claims 44-45 and 47-52 Obvious

The Office Action alleged that the newly-cited Fiz reference (US 6,083,226) and Shluzas reference (US 6,554,832) would be combinable by one of ordinary skill to make the subject matter of independent claim 44 and several other claims. However, the references point one of ordinary skill in different directions on precisely the point used to combine them.

The Fiz reference teaches a telescoping device (Figs. 7-8) having a male part 33 that is inserted into a female part 30, and the part 33 is of the same diameter as the opening in item 30. Thus, the two parts are not able to pivot toward each other. To resolve such positioning problems, Fiz teaches placement of an insert 41 inside the hook, which is pivotable side-to-side and permits connection of rods that are angled with respect to each other.

Shluzas, on the other hand, teaches a fundamentally different solution to the same issue. It provides a female piece 30 with a pie-shaped opening 40, in which a male piece 42 is inserted. The ball 48 allows item 42 to pivot from side to side, as seen in Shluzas' Figure 4. Thus, Shluzas teaches dealing with non-parallel rods by pivoting the entirety of its pieces with respect to each other, while Fiz teaches providing small inserts dedicated to altering the position of each rod with respect to its hook. Each reference sends the person of ordinary skill concerned with non-parallel rods in a different direction.

In addition to the non-combinability of Fiz and Shluzas in this context, it is believed that the Office Action's interpretation of the axes and relationships recited in independent claim 44

were not correct. Specifically, it appeared that the Office Action treated the longitudinal axis of

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the shaft of the second connector and the first central axis of the first aperture of the second body to be one and the same axis, i.e. an axis through the middle of item 30 and in the page as viewed in Fiz' Figure 7. An amendment has been made to claim 44 to clarify that those axes are not the same. The Office Action's analysis of the Fiz reference does not show or suggest such structure and relationships as are recited in claim 44.

Claims 45 and 47-52 depend from claim 44, and are allowable on that basis and/or on their own merit. For example, claim 48 recites that the fastener engages both insert and shaft, and claim 50 recites that the fastener engages the shaft. Shluzas' Figure 2 shows that screw 58 touches only ball 48, not shaft 42. Shaft 42 moves within ball 48, and ball 48 does not move longitudinally in item 30, so ball 48 cannot get out of the way to allow screw 58 to contact shaft 42. For these and perhaps other reasons, claims 45 and 47-52 are unobvious over Fiz and Shluzas.

#### New Claims

Two new claims have been added, which depend from claim 1. Claim 62 recites flanges on the interconnection element and flanges on the second body that interengage. Support is found, among other places, in Figures 1, 2 and 5 and paragraphs 52 and 55 of the application as published. No such structure is seen or suggested in the Jackson, Fiz or Shluzas references.

Claim 63 recites a perpendicular relationship between the axes of the aperture in the second body and the rod channel in the second rod connector. Support is found in Figures 1, 2, and 4, among other places. The Jackson reference shows a hole 131 that is parallel to channel 117 in item 102. The orientation of hole 131 cannot be changed, since pivoting about its axis is necessary to allow the Jackson device to avoid bone 145. In other words, modifying Jackson's device so that hole 131 is perpendicular to channel 117 eliminates its ability to pivot to get around bone 145.

#### Conclusion

To summarize, the pending claims are not anticipated by or obvious over Jackson itself or in combination with other relied-on references, and they are not obvious over a combination including the Fiz and Shluzas references, for at least the above reasons. It should be understood that the above remarks are not intended to provide an exhaustive basis for patentability or concede any basis for rejection in the Office Action, but are simply provided to overcome the

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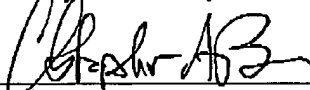
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rejections made in the Office Action in the most expedient fashion. Applicant reserves the right to make additional remarks on other issues as may be appropriate. In particular, remarks made in previous responses concerning secondary references such as Burgess or Sherman are incorporated herein by reference and may be relied on later, as necessary. Further, no necessary narrowing amendments have been made, and thus it is believed that the claims should be entitled to the entire scope permitted by their language, including equivalents.

In view of the above amendments and remarks, it is respectfully submitted that the present application is in condition for allowance. If the Examiner feels that any issues remain, the Examiner is requested to contact the Applicant's undersigned representative by telephone.

Respectfully submitted,



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